Municipal Separate Storm Sewer System (MS4) Permitting

Presented by Rhonda Thiele

MS4 Permitting

- Trends in MS4 Permitting
- New Renewal General Permit for Small MS4s
- Clarification and Changes in the New Small MS4 GP

Phase II Small MS4 Permits

- **Six Minimum Control Measures**
  - Public Education and Outreach on Storm Water Impacts
  - Public Involvement/Participation
  - Illicit Discharge Detection and Elimination (IDDE)
  - Construction Site Storm Water Runoff Control
  - Post-Construction Storm Water Management in New Development and Redevelopment
  - Pollution Prevention and Good Housekeeping for Municipal Operations

Public Education and Outreach

Public Education and Outreach

- Distribute educational materials to the public which should include a multimedia approach
- Conduct outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff
- School based programs, water fairs, storm water educational materials in billings, newsletters, etc.

New Small MS4 GP

* **Public Education and Outreach**
  - Include an employee training component related to LID, green infrastructure, and post-construction storm water runoff controls.

Public Participation/Involvement

Public Involvement /Participation

- Comply with State, Tribal and local public notice requirements
- Advisory panels, public hearings, watershed committees, stewardship programs, volunteer opportunities
- Storm drain stenciling, community clean-ups, citizen watch groups, “Adopt a Storm Drain” programs

Illicit Discharge Detection and Elimination (IDDE)

- A discharge to an MS4 that is *not composed entirely of stormwater* except permitted discharges and fire fighting related discharges

  40 CFR 122.26(b)(2)

Illicit Discharge Detection and Elimination (IDDE)

Program Components:

- Storm Sewer System Mapping
- Dry Weather Screening
- Ordinance or regulatory mechanism
- Investigation of Suspected Illicit Discharges and/or Improper Disposal
- Implement a plan to detect and address non-storm water discharges
- Inform public of hazards associated with illegal discharges and improper disposal of waste
- Prevent Sanitary Sewer Seepage
- Municipal Staff Education and Training

New Small MS4 GP

- **Illicit Discharge Detection and Elimination**
  - Develop, implement, and enforce a program to detect and eliminate illicit discharges within 18 months
  - Prioritize receiving waters for visual inspection (dry weather screening)
  - Assess 20% of these areas each year for the permit term

New Small MS4 GP

- **Illicit Discharge Detection and Elimination**

* Timeframe upon which illicit discharges are addressed and eliminated
* Promote and provide HHW services
* Maintain an IDDE database, a formal georeferenced database
* Promote proper use of pesticides, herbicides and fertilizers

Example: Identifying sanitary sewer seepage and illicit connections by TV'ing of storm drain pipes

Construction Site Storm Water Runoff Control

Poorly maintained BMPs can result in significant quantities of sediment being discharged to storm drains

Construction Site Storm Water Runoff Control

- Ordinance/Other regulatory mechanism
- Construction Site SWPPPs and BMPs
- Plan Review Procedures
- Construction Site Inspections, SWPPPs
- Enforcement
- Training and Education

New Small MS4 GP

- **Construction Site Storm Water Runoff Control**
  - Develop, implement and enforce a program to reduce pollutants in runoff from construction activities within 18 months
  - Escalating enforcement procedures
  - * Reporting requirement for enforcement procedures
  - Identify priority construction sites and inspect at least once a month

Post-Construction Storm Water Management

- Develop, implement and enforce a program to reduce pollutants from post-construction runoff within 18 months
- Ordinance/Other regulatory mechanism that requires both structural and non-structural post-construction storm water controls
- Adopt policy of encouraging project design to maintain natural drainages, reduce imperviousness, LID
- Adequate long term O & M

Post-Construction Storm Water Management

- Structural BMPs: storm water retention, grassed or vegetative swales, stream buffers, vegetative filter strips, infiltration basins, inlet and outlet protection, energy dissipaters, constructed wetlands, sand filters, etc.

Post-Construction Storm Water Management

- **Post-Construction Storm Water Management**

Infiltration basins are designed to collect stormwater from impervious areas and provide pollutant removal benefits through detention and filtration

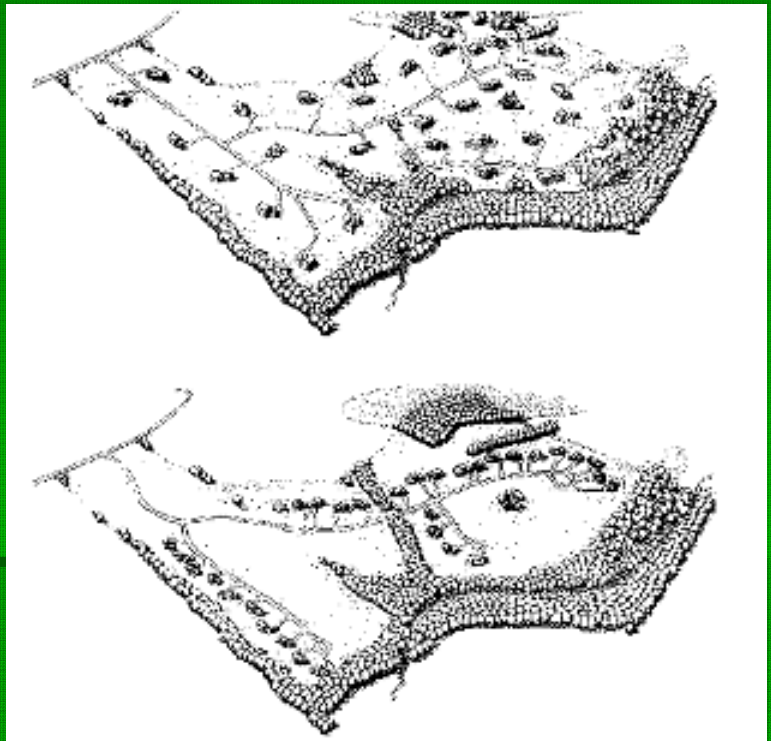
Post-Construction Storm Water Management

- Infiltration islands in parking lots can help reduce storm water runoff.

Post-Construction Storm Water Management

- Non-Structural:
  - maintaining pre-development flows
  - limiting growth to identified areas
  - minimizing imperviousness
  - maintaining open space,
  - protecting sensitive areas; wetlands and stream buffers
  - preserving natural drainage patterns education
  - Education for developers and the public about project designs that minimize water quality impacts

Post-Construction Storm Water Management



A site developed using open space design principles (bottom) maintains more undeveloped common space than the conventional development plan (top) (Source: Arendt, 1996)

New Small MS4 GP

- Post-Construction Storm Water Management

  * Document the location and maintenance specs for all newly installed water quality features.

  * Preferred design specs for different development types: Industrial parks, strip malls, restaurants, parking lots, etc.

Post-Construction Storm Water Management

- Include provisions to allow permittees to inspect BMPs on private property or require private property owners to provide annual certification by a qualified third party that adequate maintenance has been performed

Regular inspection and maintenance of storm water best management practices is important to ensure that the practices are functioning properly and to remove trash and organic debris

Pollution Prevention and Good Housekeeping for Municipal Operations

Pollution Prevention/Good Housekeeping for Municipal Operations

- O & M Plans
  - Inspections
  - Employee Training
  - Spill Response Plan
  - Site Map

Pollution Prevention and Good Housekeeping for Municipal Operations

- SWPPPs or equivalent plan for Municipal Operations
  - Storm water collection and conveyance systems
  - Roads, highways, and parking lots
  - Vehicle fleets
  - Municipal buildings
  - Parks and Open Space
  - Vehicle and equipment maintenance shops (MSGP for SW discharges associated with Industrial Activities

New Small MS4 GP

- **Pollution Prevention and Good Housekeeping for Municipal Operations**
  - Consider LID techniques for all new and redeveloped municipal facilities by preserving and recreating natural landscape features, min. imperviousness with functional and appealing site drainage (i.e., bioretention facilities, permeable pavements)
  - Consider water conservation measures
  - Inspect a minimum of 95% of all known storm water treatment and flow control facilities owned, operated or maintained by the Permittee at least twice

New Small MS4 GP

- "**Monitoring**" refers to tracking or measuring activities, progress, results, etc.
- "**Analytical Monitoring**" refers to monitoring or sampling of waterbodies or of storm water, according to specific protocal and test procedures.
- "**Non-analytical Monitoring**: refers to monitoring for pollutants by other means than sampling, such as visually.

New Small MS4 GP

- **Analytical Monitoring**
  - Routine analytical monitoring not required in Phase II Small MS4 GP with these exceptions:
  - Impaired waters/TMDLs
  - Sampling or testing required for characterizing illegal discharges/strengthen enforcement cases
  - Can provide clues to the origin of a dry weather discharge

New Small MS4 GP

- **Timelines**
  - Deadlines for implementation of program components
  - New applicants vs. renewal permittees
  - Within 90 days, have ongoing process for gathering, maintaining, and using info. to plan, track development and implementation of SWMP, evaluate compliance and effectiveness of SWMP implementation
  - 18 months; IDDE, Construction and Post-Construction

New Small MS4 GP

- **SWMP Evaluation**
- Within 90 days, all Permittees shall have an ongoing process for:
  - Gathering, maintaining, using information
  - Conduct planning, set priorities
  - Track the development and implementation of the SWMP
  - Evaluate Permit compliance/non-compliance
  - Evaluate the effectiveness of the SWMP implementation
  - SWMP availability for public review and comment

New Small MS4 GP

- **Reporting and Record Keeping**
  - All annual reports due October 1 using the template provided at DEQ

    webhttp://www.waterquality.utah.gov/UPDES/stormwatermun.htmsite
  - All records regarding permit compliance to be retained for 5 years

Questions???

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Hot Topics

- Construction Site Storm Water Runoff Control
- Post-Construction Storm Water Management
- P2/General Housekeeping for Muncipal Operations
- Total Maximum Daily Load (TMDLs)

Preparing for an Audit

- SWMP Effectiveness Evaluation
- Prior to an Audit
- Office portion of an audit
- Field portion of an audit
- Audit Report
- Enforcement Potential and Common Compliance Problems

SWMP/MS4 Permit Relationship

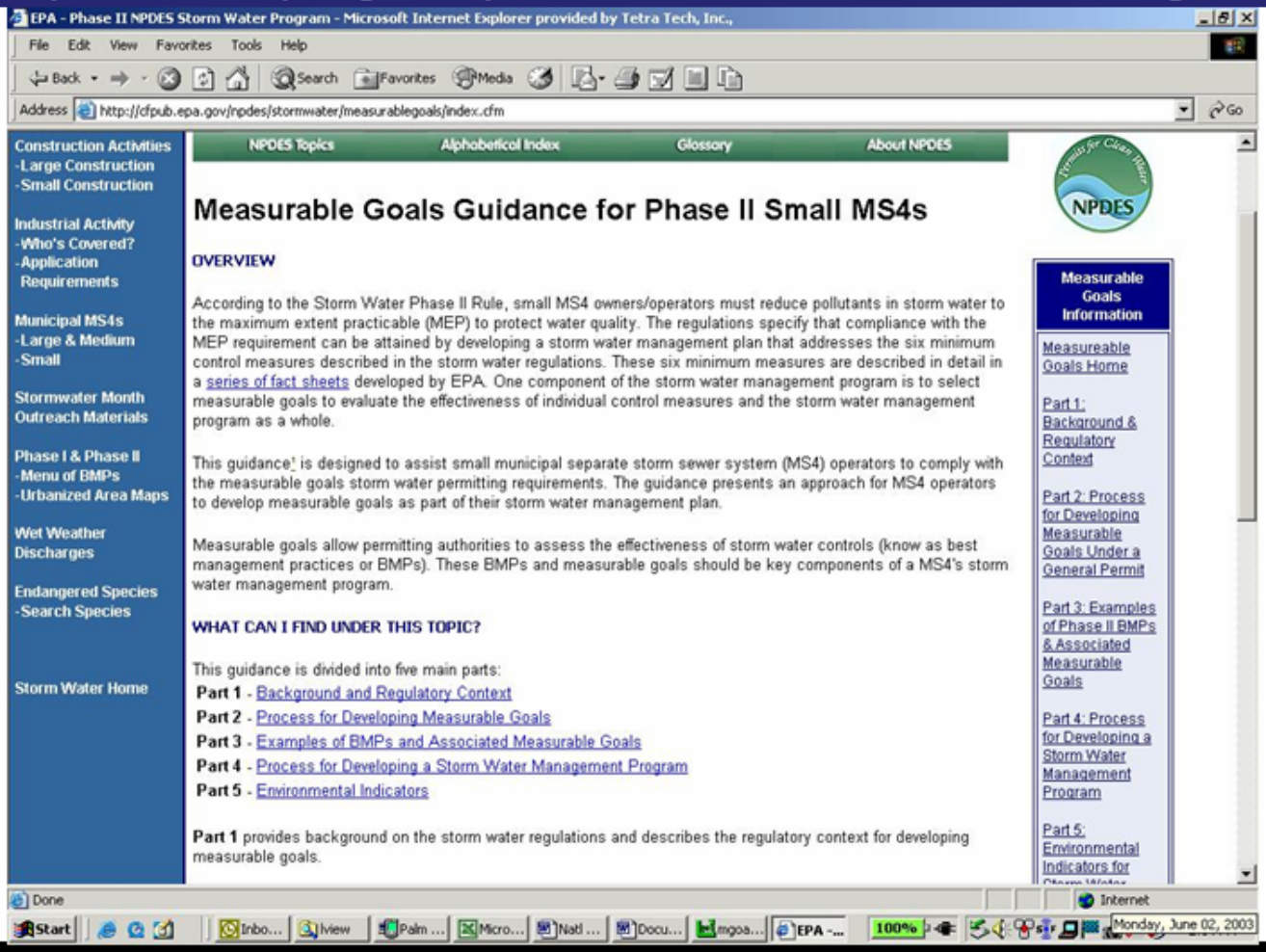
- Phase II MS4 permits require the development and implementation of a SWMP which contains the details of implementation of permit requirements
- Ultimate goal of SWMP:
  - Reduce pollutant discharges to MEP
  - Prohibit illicit discharges to the MS4
  - Protect water quality
- Therefore, provisions in the SWMP are enforceable as permit requirements

Performance Standards/Measurable Goals

- Does the SWMP include goals that directly relate to permit requirements that can be evaluated for compliance?
- Are the goals quantifiable or measurable?
- Are individual BMPs and program activities being evaluated?
- Are BMPs and program activities being modified based on the results of effectiveness evaluations?

EPA's Measurable Goals Guidance

http://www.epa.gov/npdes/stormwater/measurablegoals

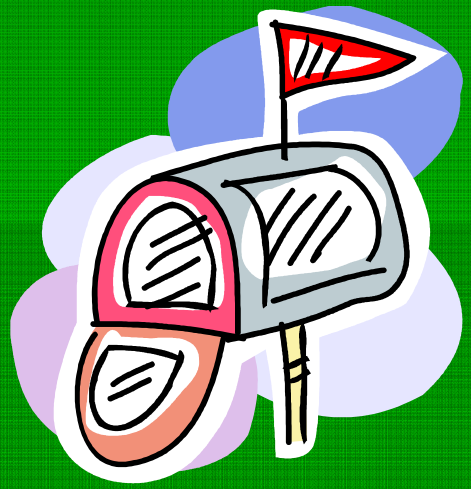


Unmeasurable Example

- **“Structural controls for water quality improvements are considered for inclusion in site drainage plans, storm drain projects, and flood control projects where applicable”**

Public Education

- **At least three times per year, send storm water information to each household within the service area through utility billings….city newsletter.**



Construction

- **Anchorage: "Permittee shall develop a training program for construction site operators and developers…within 24 months of the effective date of this permit. Permittee shall ensure that such training is provided at a minimum of once per year…"**

- **Ventura County: Train employees in targeted positions regarding storm water requirements by DATE and annually thereafter**

Municipal Maintenance

- **All catch basins will be inspected and cleaned one time between May 1 and Sept. 30 of each year**
- **Curbed streets shall be swept a minimum of twice per month**

Construction

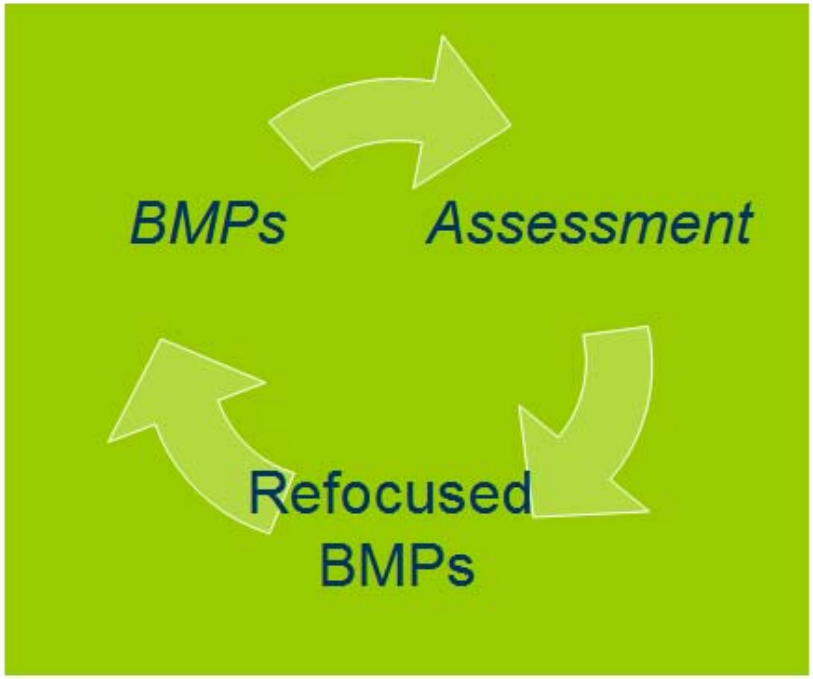
- **Permittee shall not issue a grading permit for development > 1 acre unless applicant can show that an NOI has been filed and a SWPPP prepared.**
- **Inspect priority construction sites at least once per month.**

SWMP

- Make sure the SWMP is a “living document” and not just a restatement of permit requirements
- Throughout the evaluation, compare actual program activities to those described in the SWMP

Assessment and Evaluation

- EPA's 1996 *Interim Permitting Policy for Water Quality-Based Effluent Limits in Stormwater Permits* described an iterative approach to permitting:



SWMP Coordination

The MS4 SWMP may be developed and implemented by:

- A single permittee
  - One department
  - Multiple departments or agencies
- Multiple co-permittees
- Other responsible entities

Tips: Don't go it alone!

- Think and plan regionally.
- Form/utilize/exploit partnerships.
- Network with other MS4 permittees. You'll learn from each others' mistakes and successes, & have others with whom you can commiserate.

MS4 Coordination

- The SWMP should include a description of the responsible organization and the contact person for each SWMP component and/or permit requirement
- The SWMP should also describe how each party coordinates and communicates
- Make sure roles and responsibilities are clearly defined and understood by each agency staff member involved in storm water management

Prior to the Audit

- Advance notice
- Discuss intended focus areas, tentative schedules and logistics
- Identify and request the key personnel (e.g., inspectors, planners)

Prior to the Audit

- Determination of compliance status through SWMP and annual report evaluation
- Request for documents
- Review Permittee's web site
- Determine any special water quality concerns (impaired waters, TMDLs, high quality waters)

Storm Water Management Structure

- Comprehensive storm water management planning
  - Public participation
  - Intergovernmental, agency, and department coordination
  - Performance standards or goals
  - Prioritization of resources

Storm Water Management Structure

- Data Collection and Reporting
- Assessment and Evaluation
- Program adjustments based on ongoing assessments

Records Review

- Ordinances
- Written procedures
- Inspections
- Plan review
- Municipal SWPPPs and Maintenance Schedules

Records Review

- IDDE
  - Ordinance
  - Discuss illicit discharge and spill response procedures
  - Prioritized sites for inspection/screening
  - Number of field tests conducted
  - Number of illicit connections reported
  - Number of illicit connections found
  - Number of illicit connections repaired/replaced
  - Review of illicit discharge/spill response records

Investigation of Suspected Illicit Discharges

- Does the permittee have a written procedure for tracking the source of an active illicit discharge?
  - Who performs the investigations?
  - What equipment is available?
- How are investigations tracked?
- Has an enforcement response plan been adopted for use when an illicit discharge source has been located?
- Does the permittee have the ability to collect cleanup and abatement costs from the responsible party?

Records Review

- For each illicit discharge report:
  - Is the problem clearly described in the records?
  - How long until the MS4 conducts an investigation?
  - Does the MS4 follow-up to verify that the problem was corrected?
  - What enforcement actions are taken?

Example: Outfall physical condition checklist

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

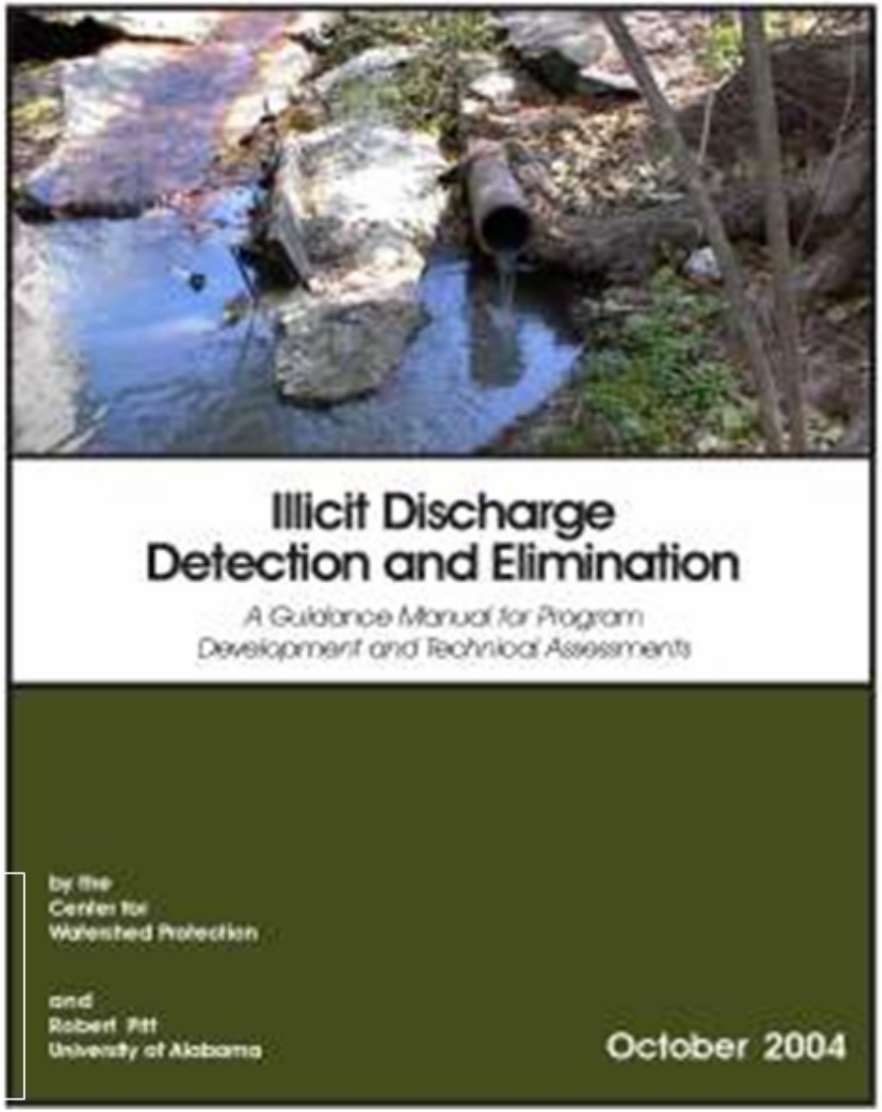
IDDE Guidance Manual

- Joint EPA-funded project between Center for Watershed Protection (CWP) and University of Alabama (Bob Pitt)
- 8 Program Elements
- Desktop Methods
- Field and Lab Protocols
- Model Ordinance
- Technical Appendices

www.cwp.org

OR

www.epa.gov/npdes



Example: Example of a truck used by an MS4 to conduct outfall screening

Spill Prevention and Response

- Does the permittee have a clear set of procedures in place that details who is responsible for responding to spills and emergency situations?
- Do field staff have spill containment supplies in their vehicles, and are they trained to contain minor spills?
- Is a contractor or other entity available for larger spills?
- Does the permittee have the ability to collect cleanup and abatement costs from the responsible party?
- How are spills and spill response tracked to ensure adequate reporting?

Public Reporting

- Does the permittee prioritize subwatersheds or neighborhoods and assign resources for educational efforts based on frequency and types of illicit discharge incidents?
- Is there a general phone number or “hotline” in that people can call to report a spill or dumping?
- What types of public outreach materials are available to publicize public reporting?
- Does the permittee track the number of public calls or complaints reporting illicit discharges?

Common Compliance Problems

- IDDE programs are largely reactionary spill response programs.
- MS4s lack adequate documented procedures for how to conduct IDDE investigations.
- MS4s don't conduct any dry weather sampling.
- MS4s often don't have criteria to determine if a discharge is illegal or not.
- MS4 training on IDDE identification, reporting, and response is not adequate.
- MS4s don't track IDDE events.

Municipal Staff Education and Training

- What type of training do field staff (e.g., storm sewer maintenance crews, street sweepers) receive on spill response and IDDE?
- Are staff generally educated about what illicit discharges are and how to report them?

Field Based Activities

- Observation of storm water inspector conducting a construction site inspection
- Observation of municipal operation and maintenance
- Presence, applicability, and maintenance of post-construction BMPs at new development sites
- Placement of public education materials (e.g., stencils, pet-waste stations, signage on permanent BMPs

Enforcement Actions

- Failure to submit annual report
- Failure to submit NOI
- Failure to develop, submit and implement the storm water program
- Failure to adequately fund and staff the storm water program

Common Compliance Problems

- Maintenance yards lack adequate controls
- Lack of SWPPP or equivalent plan
- Municipal staff lack adequate stormwater guidance
- Stormwater BMPs not used for routine maintenance activities
- Lack of training/awareness of stormwater BMPs

Common Compliance Problems

- **MS4 lacks specific standards for post-construction controls**
- **MS4 lacks review criteria, checklists, or a formal plan review process**
- **MS4 does not require maintenance of post-construction BMPs**
- **MS4 does not have a system to track structural and source control BMPs for inspections and on-going maintenance**

Common Compliance Problems

- Lack of intradepartmental coordination on stormwater issues
- Lack of co-permittee-specific SWMP
- Lack of SWMP planning documents
- SWMP does not identify pollutants of concern or program priorities
- Lack of measurable goals
- SWMP not revised or updated

Audit Report

- Deficiencies
- Implementation Schedule
- Recommendations
- Commendable Practices

Example Schedule

- Monday

8:30 – 8:45	Kick-off Meeting
8:45 – 9:30	Program Management, Effectiveness and Assessment
9:30 – 10:30	Public Education/Outreach
	Public Involvement/Participation
10:30 – 12:00	IDDE

Example Schedule

- Monday

1:00 – 2:00	P2/Good Housekeeping
2:00 – 5:00	Municipal Operations (Field)

- Tuesday

8:30 – 12:00	Construction Site Runoff Control/Post-Construction
1:00 – 5:00	Construction (Field)

Tips: Don't forget the point!

- Read your permit, then read it again, and then yet one more time. After that, make it a point to re-read it at least once a year.
- Build a pro-active relationship with your state permitting authority. When in doubt ask questions.
- Stay focused on water quality. It's easy to get distracted by administrative activities.